






HOW SHOULD I TREAT ?

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- 63 years old woman
 - Underlying disease : HTN
 - Atherosclerosis risk factor : smoking
 - Present with dry gangrene left 5th toe for 3 weeks

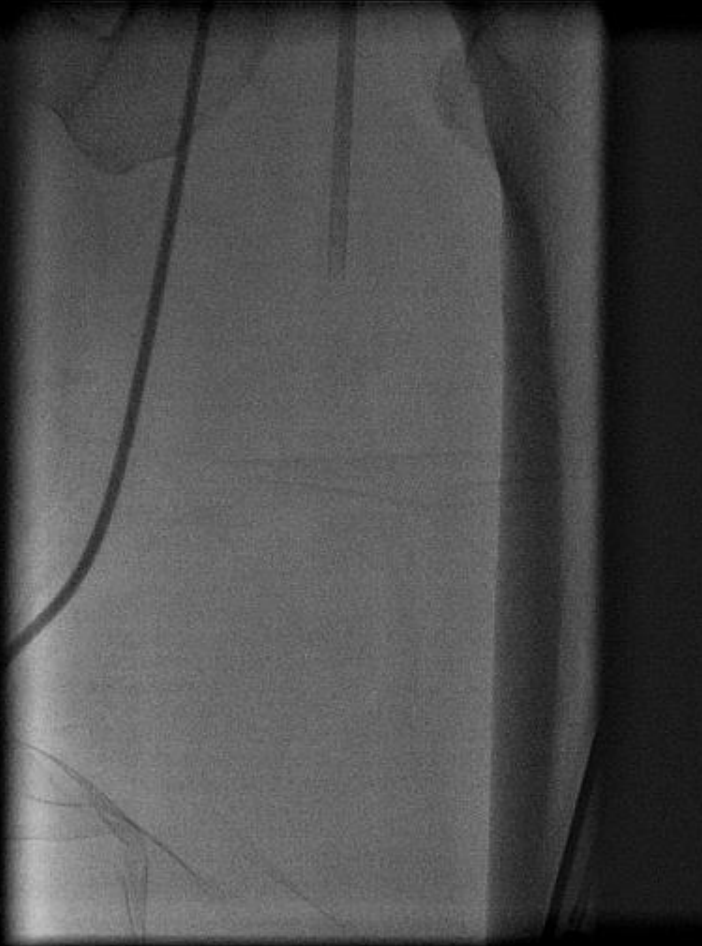
- 
- Physical examination
 - BP 140/70mmHg PR 70 bpm
 - GA: not pale no jaundice, no edema
 - CVS and RS normal
 - Peripheral pulse
 - upper extremity full 2+ equal both
 - Rt femoral 2+ Lt femoral 2+
 - Rt popliteal 2+ Lt popliteal 2+
 - Rt dorsalis pedis 2+ Lt dorsalis pedis 0
 - Extremity : cold at left foot up to ankle
 - Dry gangrene at left 5th toe

- 
- CTA run off both legs showed no significant stenosis of bilateral common, internal, external iliac , common femoral, superficial femoral and popliteal a. Suspected significant stenosis of left anterior and posterior tibial a.
 - She was sent to angiogram left leg.



FIRST ROUND

Angiogram left leg





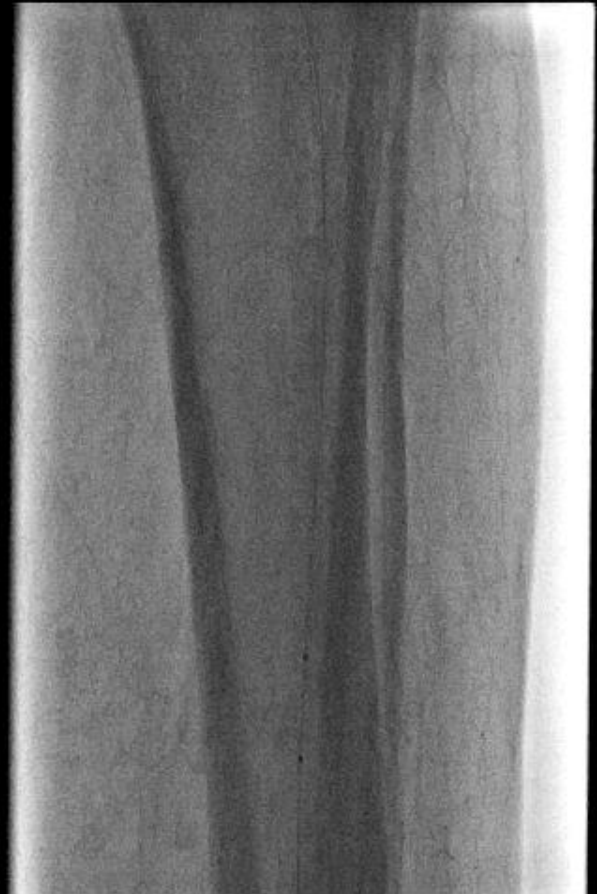
Strategy

- Antegrade approach via LFA with 6 Fr sheath
- Diagnosis angiogram via 6 Fr JR3.5
- Angiogram showed patent left SFA, popliteal a., diffuse disease of peroneal a., 100% stenosis of anterior tibial a. at mid segment, 100% stenosis of distal part of posterior tibial a.
- Catheter : 6 Fr JR 3.5 Guiding catheter
- Wiring with 0.014"Whisper MS wire
- POBA with Compliant balloon (Sprinter Legend)2.0x15 mm

PTA to peroneal a.



Wiring with 0.014" Whisper MS





Compliant balloon 2.0x15 mm
up to 4-8 atm 1-2 minutes

Final angiogram



- Total contrast 100ml
- Flu time 10 minutes
- Plan intervention to PTA and ATA next
- Medication: ASA, cilostazol 200 mg/day, clopidogrel 75 mg/d, Simvastatin 20 mg/d

- 
- 
- Post intervention the ulcer left 5Th toe same as previous, then patient was sent to PTA posterior tibial 9 days later



SECOND ROUND

Angiogram left leg



Strategy

- Antegrade approach via LFA with 6 Fr sheath
- Diagnosis angiogram via 6 Fr sheath
- Angiogram : patent left SFA, dissection at distal popliteal a., restenosis of distal peroneal a., 100% stenosis of anterior tibial a. at mid segment, 100% stenosis of distal part of posterior tibial a.
- Plan POBA to peroneal a. , treat dissection of popliteal a., open PTA to pedal a.
- Catheter : 6 Fr long sheath (Destination sheath 45 cm)
- Wiring with 0.014" Whisper MS wire
- POBA with Compliant balloon

Optimize balloon dilatation

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April 2002 Volume 13, Issue 4, Pages 355–359

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Peripheral Arterial Balloon Angioplasty: Effect of Short versus Long Balloon Inflation Times on the Morphologic Results

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102;

PURPOSE

To evaluate the effect of different balloon inflation times on angiographic results in peripheral angioplasty.

MATERIALS AND METHODS

Seventy-four infrainguinal arteriosclerotic lesions were randomized prospectively to undergo balloon dilation for 30 seconds (group I) or 180 seconds (group II). Each group consisted of 37 patients. Postinterventional angiograms were evaluated by two blinded readers. Dissections were graded as follows: 1 = no dissection; 2 = minor flap; 3 = extensive dissections; 3 and 4),

Prolong balloon inflation of 180 seconds improve immediate angiographic result

In group I, major dissections were noted in 16 patients (43%) compared with five patients (14%) in group II ($P = .009$). Residual stenoses were found in 12 patients (32%) in group I compared with five patients (14%) in group II ($P = .096$). The rate of additional interventions was significantly higher in group I than in group II (20 of 37 vs nine of 37; $P = .017$).

CONCLUSION

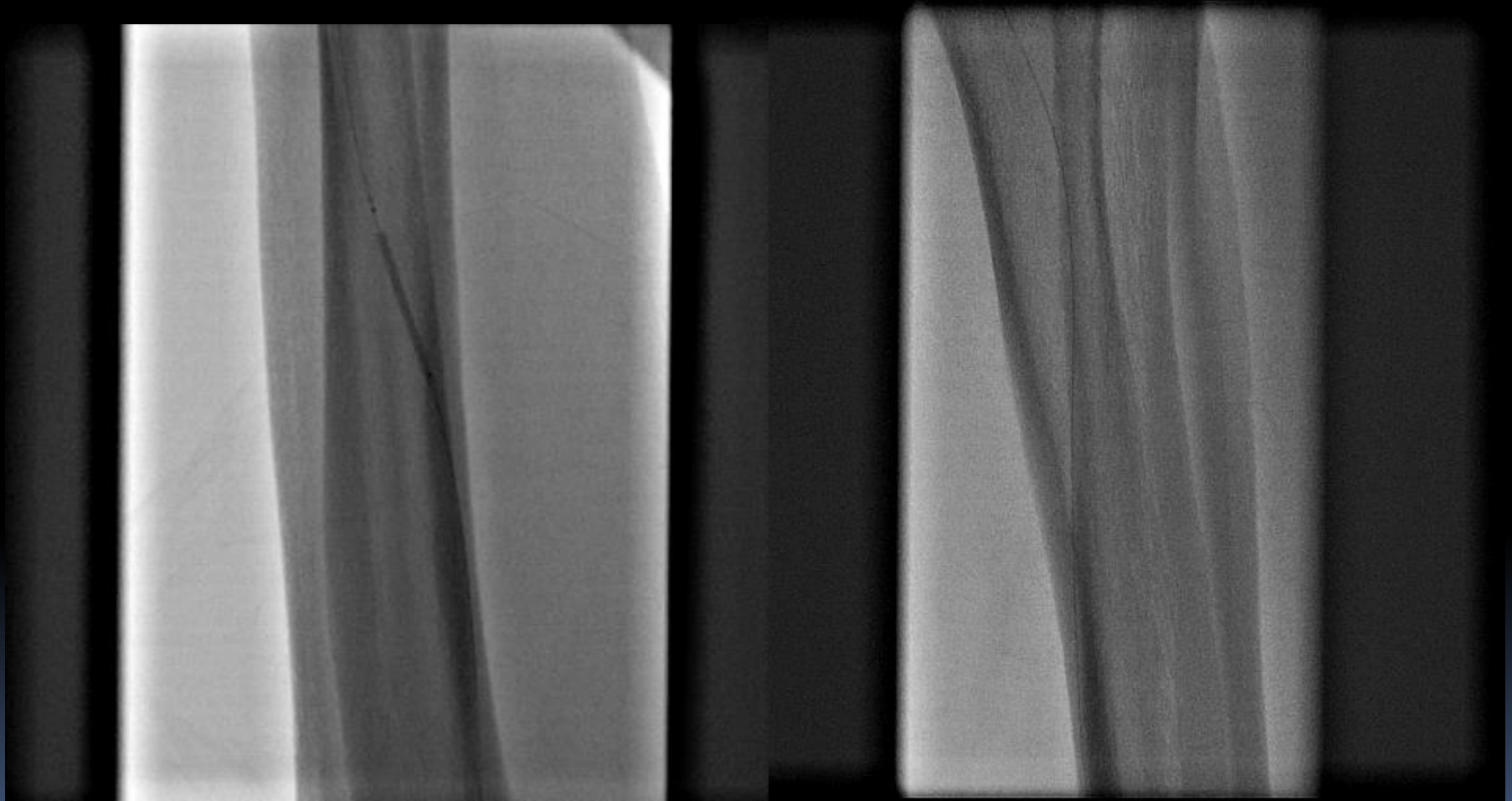
A prolonged inflation time of 180 seconds improves the immediate angioplasty result of infrainguinal lesions compared to a short dilation strategy. Significantly fewer major dissections and a modest reduction of residual stenoses are observed. The requirement of costly and time-consuming further interventions is significantly reduced.

Optimize balloon angioplasty

- Prolonged balloon inflation (>180 sec)
- Dilatation using a correct balloon size

Circulation, 1994, Vol 89, 1118-1125; Am J Cardiol. 1996 May 15;77(12):1062-6
Am Heart J. 1998 Apr;135(4):709-13; J Vasc Interv Radiol 2002, 13:355-359
J Vasc Interv Radiol 2002 Apr;13(4):361-9

POBA to left peroneal a.



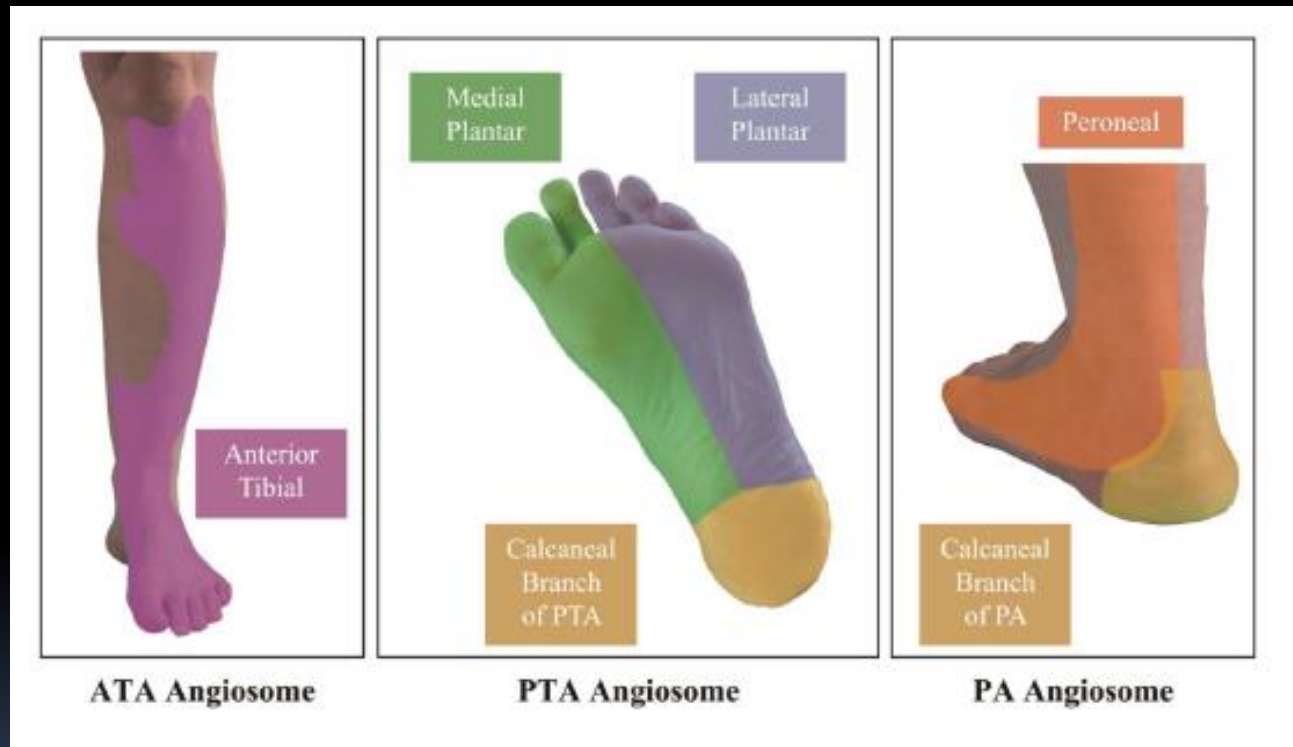
Sprinter Legend 3.0x20 mm at 3 atm 3minutes

POBA to popliteal a.

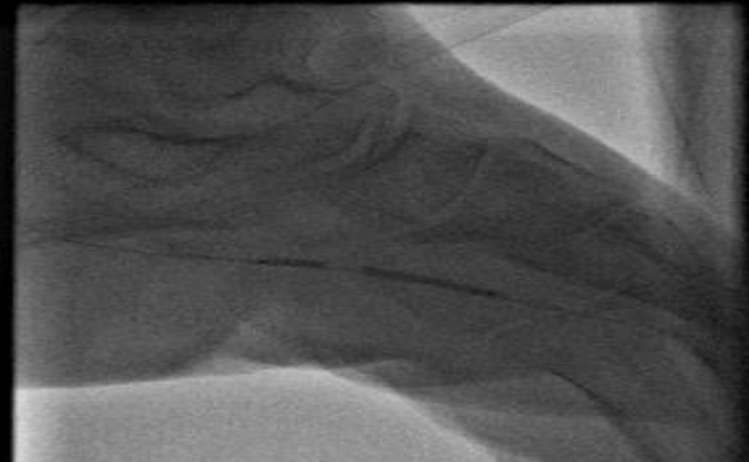
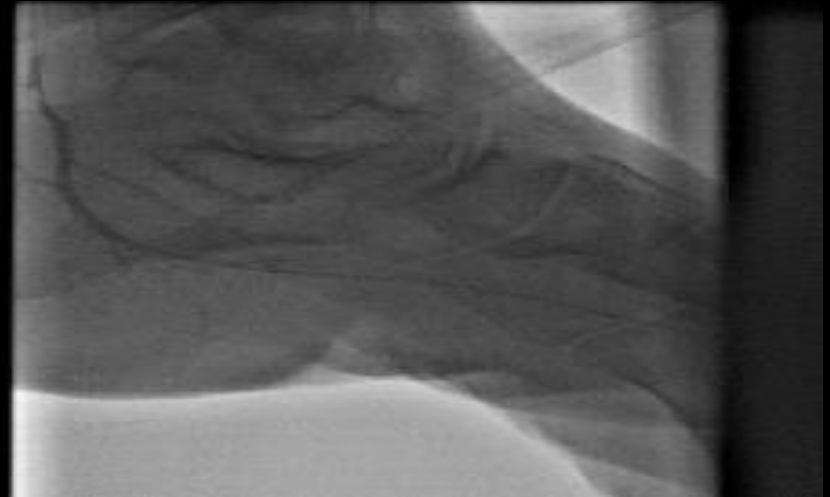


Fox SV balloon 5.0x40 mm 2 atm

Revascularization base on angiosome




PTA to left PTA





Sprinter Legend 2.0x30 mm 2-3 atm

Final angiogram



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- Total contrast 100 ml, Flu time 25 minutes
 - After second PTA, her left foot become more redness and warm, the gangrene limitation at 5th toe
 - Home medication
 - ASA 81 mg/d, clopidogrel 75 mg/d, cilostazol 200 mg/d, simvastatin 20 mg/d

- 
- Next visit 2 weeks
 - She complained left 5th toe pain and physical examination showed wet gangrene left 5th toe with cold and loss left dorsalis pedis pulse.
- 



THIRD ROUND

Angiogram

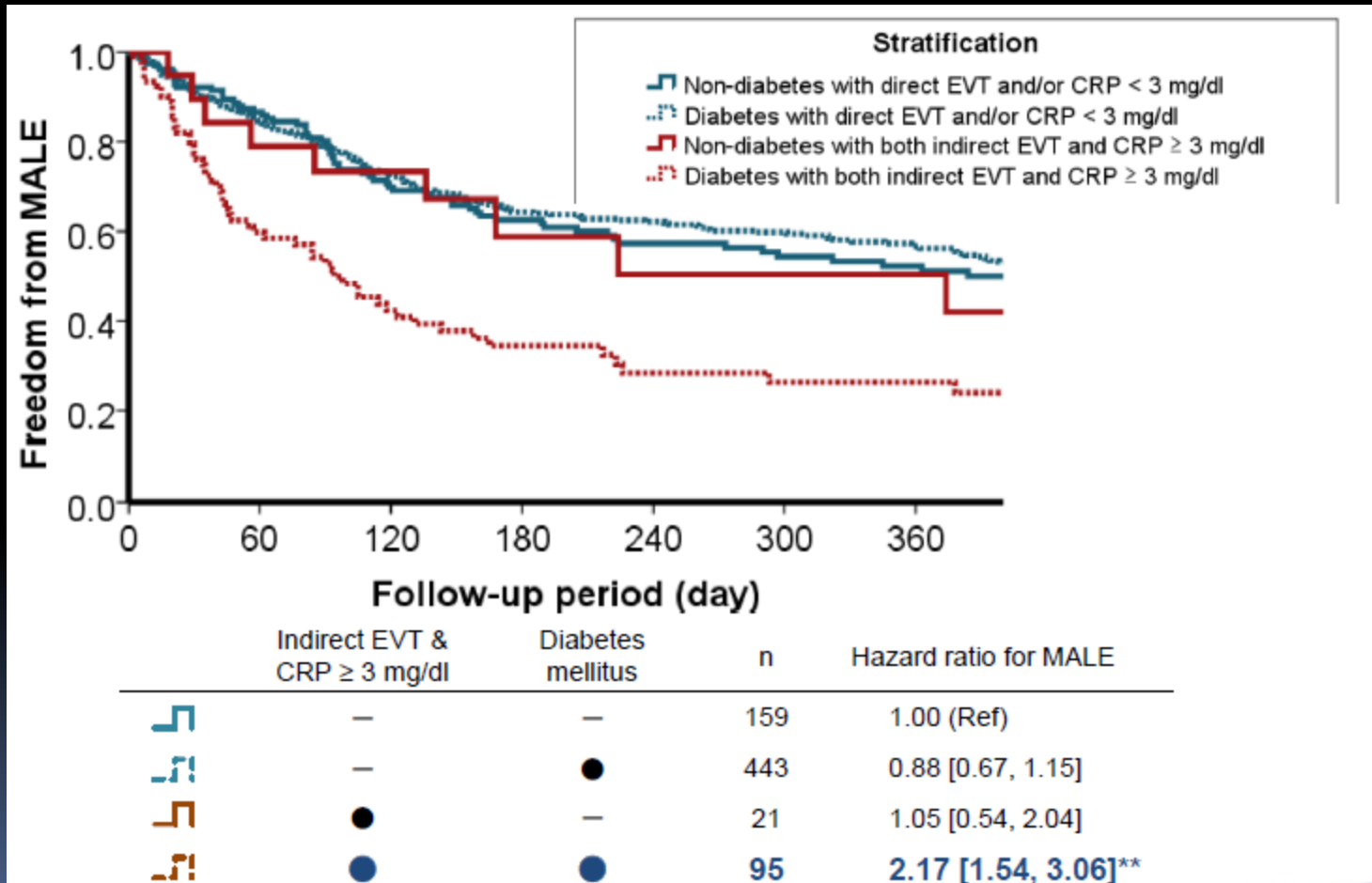


Patent popliteal a., peroneal a.
Restenosis of PTA
100% stenosis of ATA

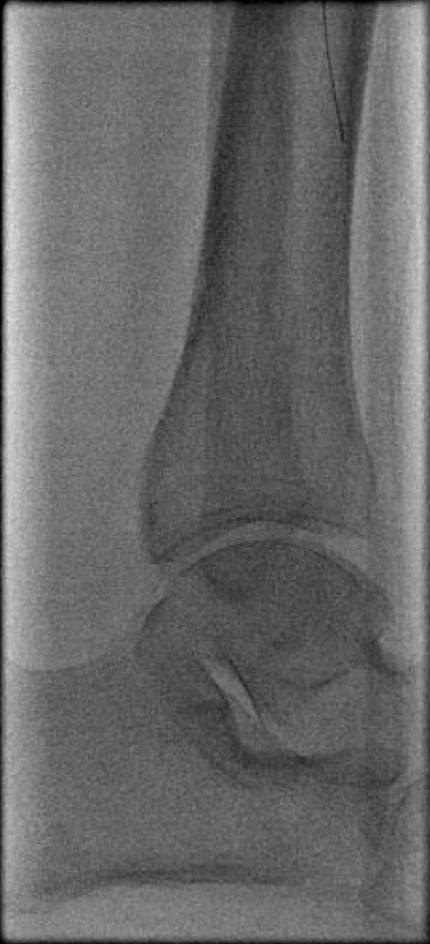
Strategy

- Antegrade approach via LFA with 6 Fr sheath
- Diagnosis angiogram via 6 Fr long sheath (Destination sheath 45 cm)
- Angiogram : patent popliteal a., peroneal a., 100% stenosis of anterior tibial a. at mid segment, 100% restenosis of distal part of posterior tibial a.
- Plan try to open ATA, PTA to pedal a.
- Catheter : 6 Fr long sheath (Destination sheath 45 cm)
- Wiring with 0.014" Whisper MS wire
- POBA with Compliant balloon

Limb prognosis equivalent for direct & indirect endovascular revascularization **except** only in the presence of both diabetes & wound infection : indirect has a poorer outcome

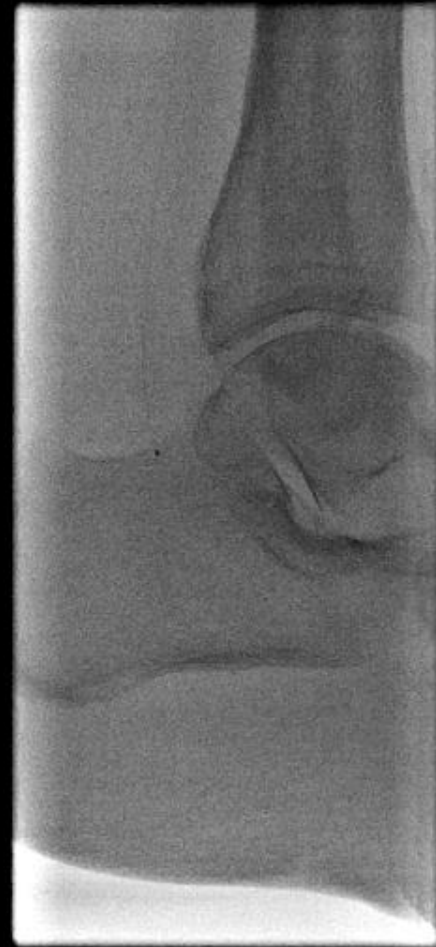


Direct endovascular revascularization : ATA

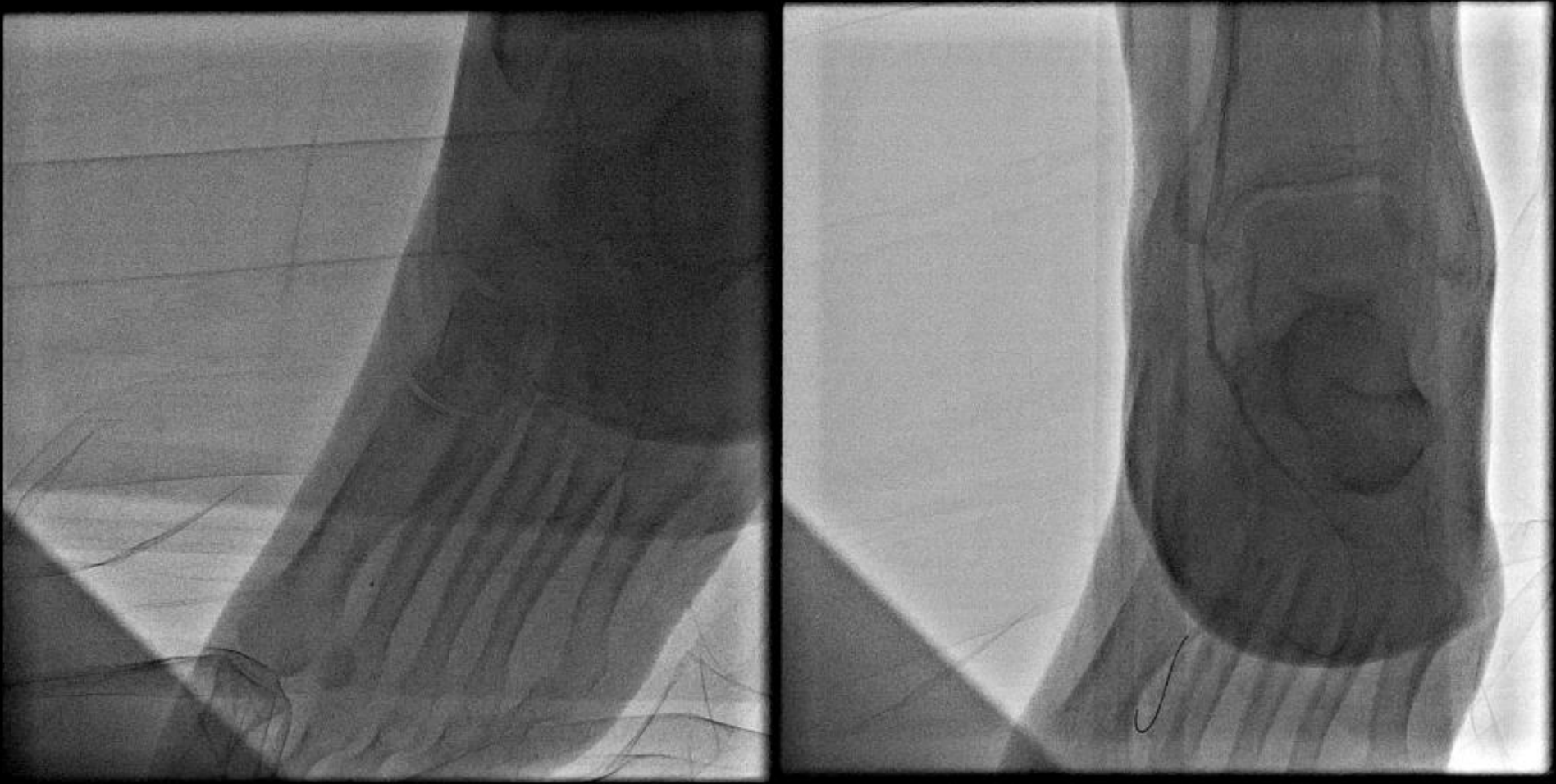


Wiring with 0.014" Whisper MS with microcatheter -> Fail

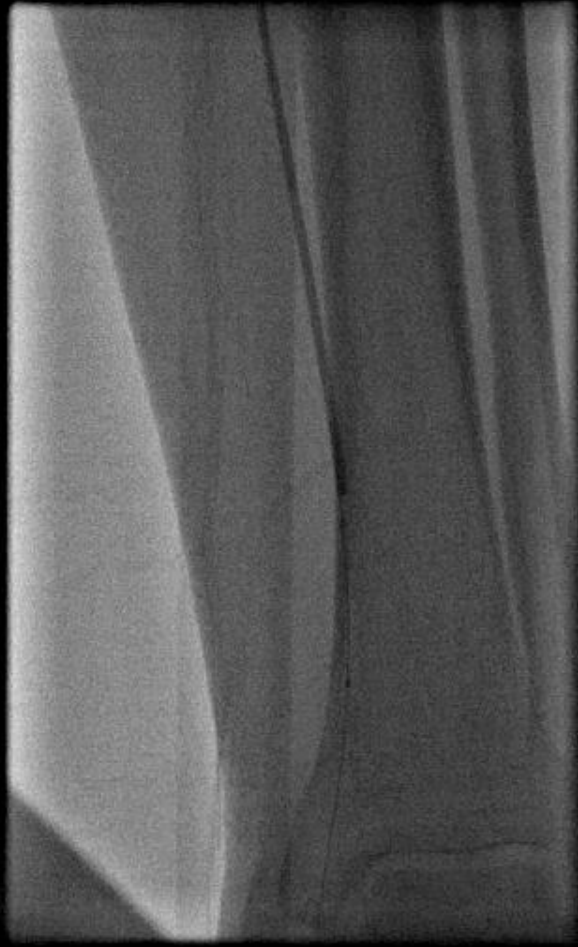
PTA



Check for Plantar arch a.



PTA



POBA PTA to arch with Armada 14 2.0x200mm 1-2 atm

Role of Drug coating balloon

Circulation

JOURNAL OF THE AMERICAN HEART ASSOCIATION



Drug-Eluting Balloon in peripherAl inTervention for Below the Knee Angioplasty Evaluation (DEBATE-BTK): A Randomized Trial in Diabetic Patients with Critical Limb Ischemia

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Amphirion In.Pact, Medtronic

Background—One-year restenosis rate after balloon angioplasty of long lesions in below-the-knee (BTK) arteries may be as high as 70%. Our aim was to investigate the efficacy of a paclitaxel drug-eluting balloon (DEB) vs. conventional percutaneous transluminal angioplasty (PTA) for the reduction of restenosis in diabetic patients with critical limb ischemia (CLI) undergoing endovascular intervention of BTK arteries.

Methods and Results—The Drug Eluting Balloon in peripheral inTervention (DEBATE)-BTK is a randomized, open label, single-center study comparing DEB vs. PTA. Inclusion criteria were: diabetes, critical limb ischemia (Rutherford ≥ 4), significant stenosis or occlusion > 40 mm of at least one BTK vessel with distal run-off, and life expectancy > 1 year. Binary in-segment restenosis at 1-year angiographic or ultrasonographic follow-up was the primary endpoint. Clinically-driven target lesion revascularization (TLR), major amputation and target vessel occlusion were the secondary endpoints. One hundred and thirty two patients with 158 infrapopliteal atherosclerotic lesions were enrolled. Mean length of the treated segments was 129 ± 83 mm in the DEB vs. 131 ± 79 mm in the PTA group ($p=0.7$). Binary restenosis, assessed by

Primary end point

Binary restenosis 27% in DEB VS 74% in PTA ($p < 0.001$)

PTA group ($p=0.9$).

Conclusions—DEB, as compared to PTA, strikingly reduce 1-year restenosis, target lesion revascularization, and target vessel occlusion in the treatment of BTK lesions in diabetic patients with CLI.

DEB vs Standard Balloon Angioplasty for Infrapopliteal Arterial Revascularization in CLI

IN.PACT DEEP: Patients randomized to IN.PACT Amphirion paclitaxel-eluting balloon (n = 239) or standard balloon angioplasty (n = 119).

- No differences between DEB and control arms in co-primary efficacy endpoints of clinically driven TLR (9.2% vs 13.1%; $P = .291$) or mean late lumen loss (0.61 vs 0.62 mm; $P = .950$)
- Primary composite safety endpoint occurred in 17.7% of DEB group and 15.8% of control group (P for noninferiority = .021)
- Major amputation trended higher with DEB compared with standard balloon angioplasty (8.8% vs 3.6%; $P = .080$)

Conclusions: In CLI patients, below-the-knee use of a DEB is as effective as standard balloon angioplasty but linked with a trend toward a higher rate of major amputation.

Zeller T, et al. *J Am Coll Cardiol.*
2014;64:1568-1576.





Role of DCB

- Further studies are needed to answer some of the remaining queries about safety and efficacy.
- Close attention to details such as the role of medial arterial calcification and appropriate balloon sizing is of paramount importance to determine if DCBs will be good enough as standalone therapy

Final angiogram



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- Then 1 month later patient developed progression of gangrene of toe and infection
 - Then patient was sent to below knee amputation.
- 

Pitfall and Points of learning in this case

- Need to optimize balloon angioplasty
 - Size of balloon
 - Duration of inflation
- Revascularization base on angiosome
 - Direct endovascular revascularization good outcome than indirect
- Beware of dissection and treat it
- Adequate medication and lifestyle modification treatment



THANK YOU